

## **SENSOR PROTOTYPE SYSTEM**

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**January 2004**

**Final Report**

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REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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1. REPORT DATE (DD-MM-YYYY) January 2004		2. REPORT TYPE Final Report		3. DATES COVERED (From - To) 30-Sep-2002 – 31-Dec-2003	
4. TITLE AND SUBTITLE  Sensor Prototype System				5a. CONTRACT NUMBER F29601-00-D-0169 (DO 0014)	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER 000000	
6. AUTHOR(S)  David J. Gallant				5d. PROJECT NUMBER  SAFF	
				5e. TASK NUMBER LT	
				5f. WORK UNIT NUMBER 01	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Boeing LTS, Inc. P.O. Box 5670 Albuquerque, NM 87185				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)  AFRL/DELS 3550 Aberdeen Ave SE Kirtland AFB NM 87117-5776				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) AFRL-DE-PS-TR-2004-1040	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution is Unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT  This report summarizes the technical activity provided under task order 0014 of the SLIDERS contract. This task provided for continued research and development, and on-going operations support for the sensor program.					
15. SUBJECT TERMS Mid-Infrared, Semiconductors, Lasers					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON Matthew Mullins
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER (include area code) (505) 846-8160
			Unlimited	10	



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## **1.0 INTRODUCTION**

The SLIDERS contract encompassed several research efforts within the Semiconductor Laser Branch of the Laser Division, Directed Energy Directorate of the Air Force Research Laboratory. The scope of this contract included development, design, fabrication, procurement, management, operations and maintenance of optical, electronic, and mechanical systems, subsystems, and components. Principal efforts included theory and concept development, design analysis, laboratory operations, and semiconductor laser and diode-pumped laser development, operation and maintenance. Efforts also included the development, procurement, and operation of instrumentation to evaluate and characterize laser systems.

The objective of task 0014 under the SLIDERS contract was to provide for continued research and development on a new sensor system and for on-going operation and maintenance support. Efforts supported the DELS branch of the Directed Energy Directorate at the Air Force Research Laboratory.

## **2.0 TECHNICAL ACTIVITIES**

Task 14 was a continuation of the sensor project. This task involved lab operation and maintenance, in theater maintenance of units, including training of subcontractors for in field maintenance, and new site surveys as required. A new prototype system was partially developed in the lab under this task and was ultimately deployed to building 774, Kirtland AFB, for additional environmental and lifetime testing.

Progress on this task was slowed due to lack of funding and due to technical issues. During the research and development phase of building up the new prototype unit, the environment control unit selected for the new system enclosure developed several severe failures. A trip to the environment control unit manufacturing facility and discussions with the manufacturer's engineering staff ultimately resolved the failure mechanism.

To facilitate testing of the new prototype, a test instrumentation shed was completed by construction contractors and inspected by CE. Base CE later installed power to the shed. The new prototype system was installed, aligned and left running for data collection. A new security system was engineered and developed for the 774 area. When fully implemented the security system will include video surveillance and dial-up capabilities on alarm.

The customer we are working with visited the lab to inspect the progress of the new system. He expressed satisfaction with the improvements made to the system.

Documentation of the mechanical, optical, electronics and electrical systems continue to be an on-going endeavor.



### **3.0 CONCLUSIONS**

This task provided for continued research and development, and on-going operations support for the sensor program. We made significant progress in building up the new system and are currently testing it under various conditions at KAFB. Further efforts are required to fully test the system and to deploy it in a remote field location.

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